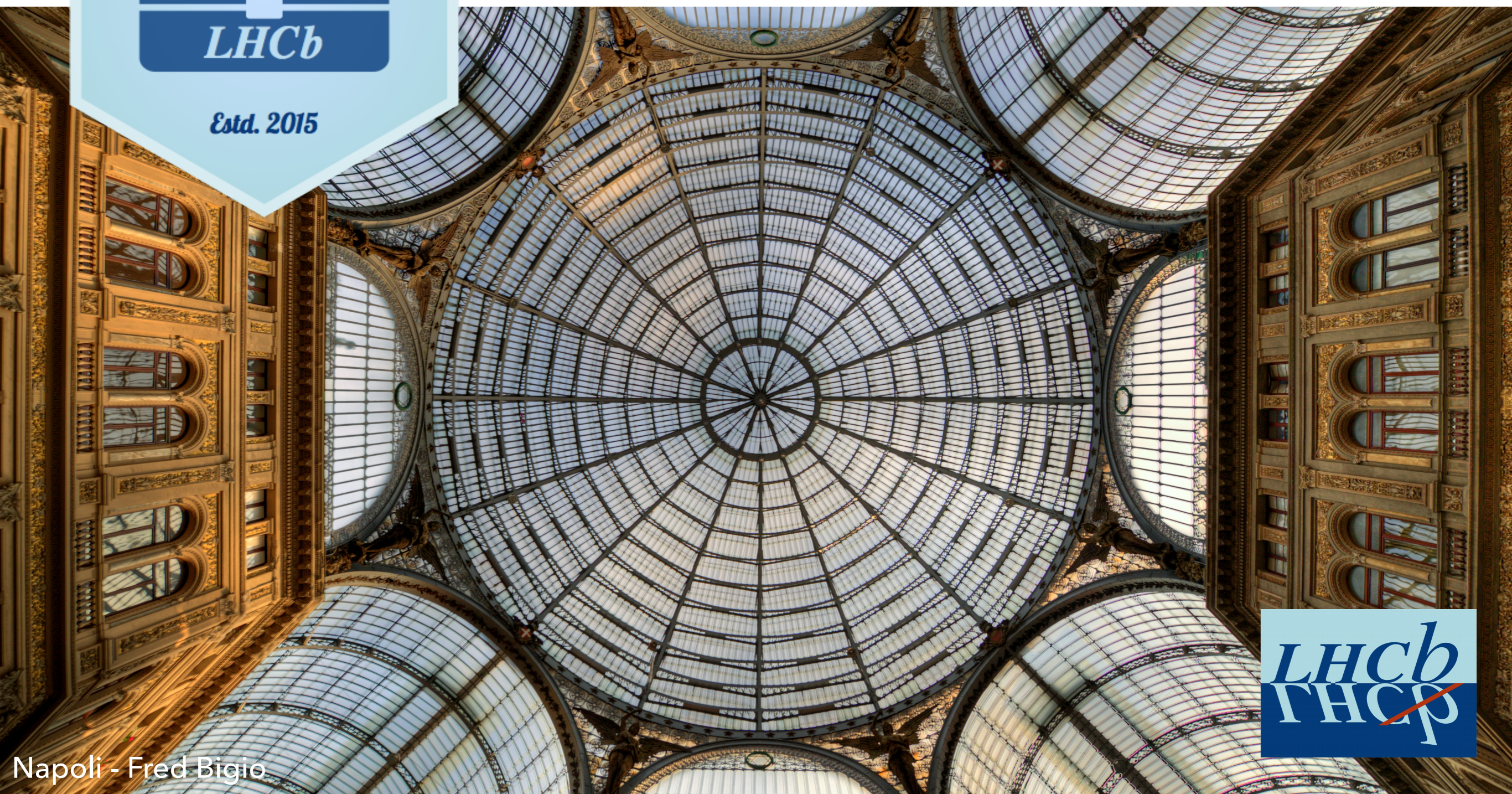


The Starterkit

Violaine Bellée on behalf of the LHCb Collaboration

~ 28 March 2017 ~ Napoli ~



Goals and motivations

❖ Started in 2015 following these observations:

Students trained as physicists but asked to be data analysts

Broken or not up-to-date documentation

Enormous amount of software to learn for newcomers

Lots of experiment-specific conventions

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❖ What we expect to accomplish:

➤ Give a **solid starting point** to newcomers in the most used software in their experiment (general and specific)

➤ Improve **software literacy** in the experiment

➤ Teach **good practices**

➤ Help newcomers **socialise and integrate** in the collaboration

Tutorials

Tutorials in separate gitbooks for:

- **General** software
- **LHCb specific** software

Main ideas:

- **Basic understanding**
- **Building blocks** to work in complex workflows
- Full examples of working and **up-to-date code**
- Modifications via **fork and merge**

Workshops

Held at CERN, only a few rules:

- **Small fee** (25CHF)
- **Small groups** (20) with 1 instructor and 2+ helpers
- **Hands-on** sessions (very interactive)
- **No video conference**
- **No copy-paste** (natural pace)
- Use **stickers** to get live feedback

Common basics

- basics: command-line operations, shell scripting
- version control system: git
- computing language: basic python (with matplotlib, pandas)

Experiment specific software (basic)

- software for physics analysis
- usage of the grid

Experiment specific software (advanced)

- more specific software for physics analysis (trigger, central selection)
- simulation software
- experiment specific version control: LHCb gitlab

Material divided in three sets of tutorials

Common basics

<https://lhcb.github.io/analysis-essentials/>

Experiment specific software (basic)

<https://lhcb.github.io/starterkit-lessons/first-analysis-steps/>

Experiment specific software (advanced)

<https://lhcb.github.io/starterkit-lessons/second-analysis-steps/>

Common basics

- basics: command-line operations, shell scripting
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Starterkit Workshop

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Experiment specific software (advanced)

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- simulation software
- version control: LHCb gitlab

Impactkit Workshop

Starterkit Workshop

Targeted at **new members** of the collaboration

40 participants, 4 days

8-12 instructors, 15-20 helpers

1.5 days for **general tools**

2.5 days dedicated to **LHCb software**

Impactkit Workshop

Targeted at a **more experienced** audience

20 participants, 3 days

4-5 instructors, 10 helpers

1.5 days of **lessons** on advanced software topics

1.5 days dedicated to a **hackathon** (in groups of 2) on short computing projects proposed by the collaboration

The particularities of our approach

- ❖ Organisation, teaching and lesson writing mostly done by **early-career scientists** (MSc and PhD-level students), always on a **voluntary basis**
- ❖ **High turnover** of teachers, helpers and organisers
- ❖ Use tools (Google docs, git issues) to ensure **good knowledge transfer**



Pros

Very efficient teaching method

Lots of interactions and feedback

Not very expensive

Lots of people are **ready to give back** and contribute to future StarterKit workshops

Cons

Complicated room booking

High number of volunteers needed

Coming on site can be difficult for the students (hence we try to organize the workshops close to an event like LHCb week)

Some successes

Since 2015

4 Starterkit workshops
(172 LHCb students)

2 Impactkit
workshops
(40 students)

2017

Joined efforts with **ALICE**
to mutualize organization and lesson
writting

- Very positive collaboration,
allowed to create a **common
repository for basic courses**

Starterkit pages
now widely used
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“LARGE NUMBER OF USEFUL
EXAMPLES, GOOD/FULL
EXPLANATION”

The feedback

“TOO FAST IN THE LHCb
SPECIFIC PART”

“INTENSIVE TRAINING!
HARD BUT NICE!”

“WE WERE NEVER ALONE IN CASE OF
PROBLEMS”

“TOO MUCH TIME SPENT
ON THE BASIC PART”

❖ Suggestions for Sustainability/Collaborating with others

Sustainability already ensured within LHCb

- all documentation updated at each workshop
- former helpers can teach and organise later workshops

Possible **collaborations** across physics experiments for the **basic software teaching** (shell, git, python)

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❖ The biggest barrier to accomplish fruitful collaboration between existing initiatives:

- Our model **does not scale very well** (high number of people needed to teach/help, on-site presence)

❖ A suggestion to overcome this barrier?

- Take the Starterkit model to **organise your own workshop** (bigger collaboration could organise regional workshops like Atlas Asia)

How to organise your own Starterkit workshop:

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- ☑ Preliminary condition: Make sure that **all the material** you want to cover is available **on a central** (and easy to access) **repository**



- ☑ **Set up a team!** You need 2 (very motivated) organisers and ~4 instructors and 10 helpers for each group of 20 students



- ☑ **Review all the material** so that everything is up-to-date (to be done by the teachers and helpers, and if applicable by the members of the relevant groups within the experiment)



- ☑ **Book rooms:** One for each group, preferably meeting rooms with round tables rather than auditoriums, with a beamer to project the screen of the instructor



- ☑ **Organise a social event** for people to network, discuss with instructors and helpers






- ☑ Equip yourself with **stickers** (for feedback) and a **coffee machine** (for work enhancement)

...and you're good to go!

Thanks for your attention!



1    Conference Rooms
A | B | C | D | E Salles de conférences

Room	Time	Event
A		Main Amphitheatre
E	20:00	NTW Student Programme Higgs Hunt
B	18:30	Solar Club Monthly meeting
C		Meeting room